



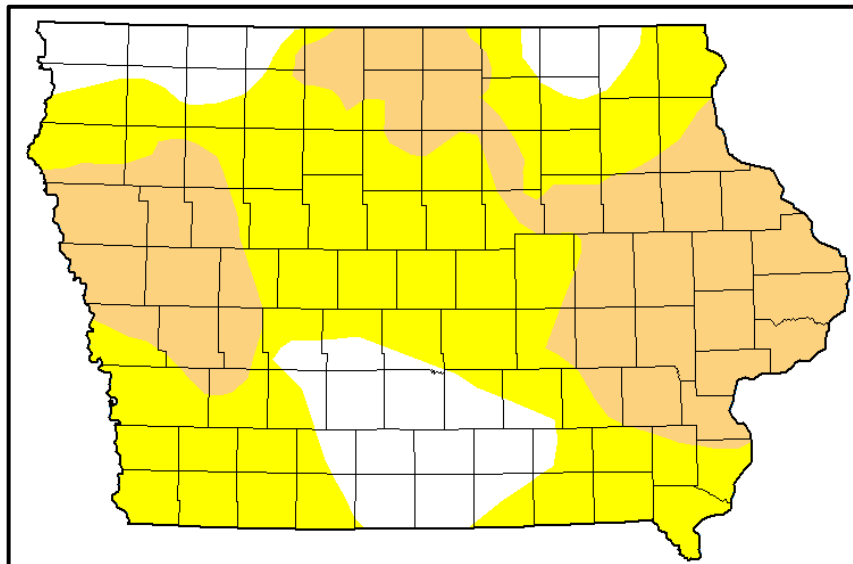
# WATER SUMMARY UPDATE

Published Date March 10, 2022 | Issue 129

## A snapshot of water resource trends for February, 2022

### Drought Monitor - Conditions as of March 10, 2022

National Drought Mitigation Center and partners

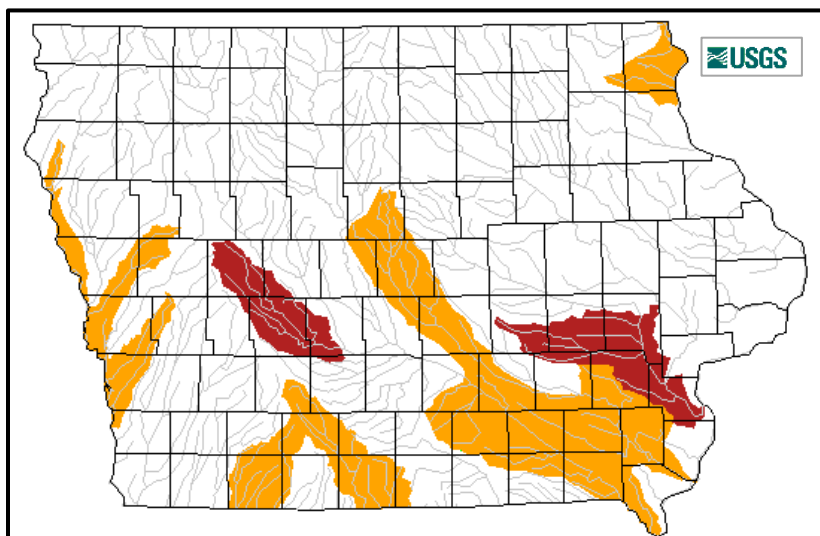


#### Intensity:

- D0 Abnormally Dry
- D1 Moderate Drought
- D2 Severe Drought
- D3 Extreme Drought
- D4 Exceptional Drought

*The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.*

### Stream Flow – February, 2022

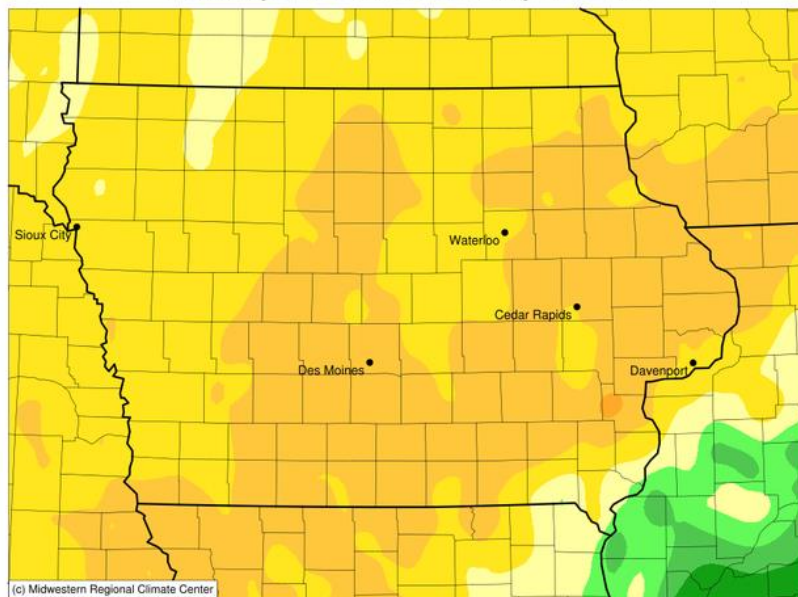


#### Explanation - Percentile classes

	<10	10-24	25-75	76-90	>90	
Low	Much below normal	Below normal	Normal	Above normal	Much above normal	High

## Accumulated Precipitation (in): Departure from 1991-2020 Normals

February 01, 2022 to February 28, 2022



(c) Midwestern Regional Climate Center

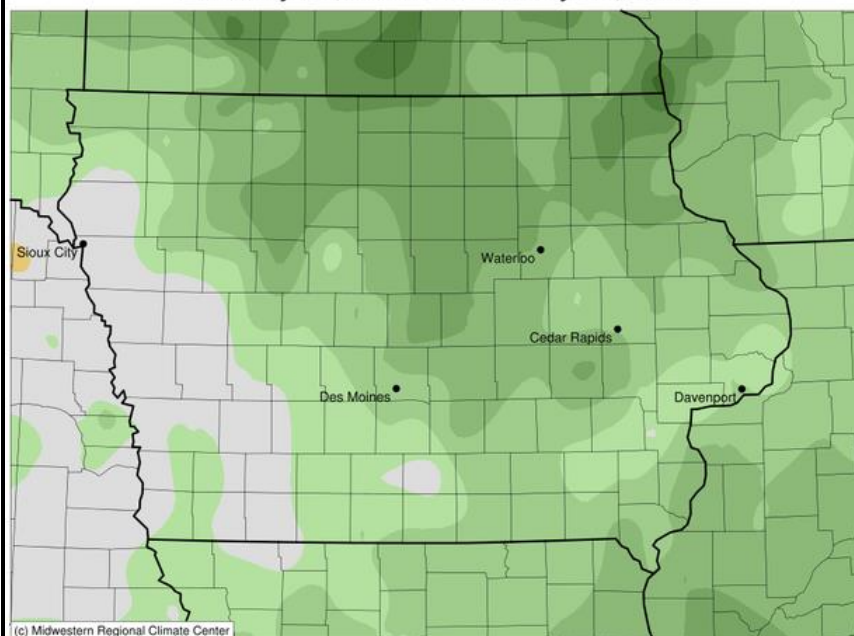


-1.5 -1 -0.5 0 0.5 1 1.5 2 2.5 3

Stations from the following networks used: WBAN, COOP, FAA, GHCN, ThreadEx, CoCoRaHS, WMO, ICAO, NWSLI, Midwestern Regional Climate Center  
cli-MATE: MRCC Application Tools Environment  
Generated at: 3/9/2022 4:23:00 PM CST

## Average Temperature (°F): Departure from 1991-2020 Normals

February 01, 2022 to February 28, 2022



(c) Midwestern Regional Climate Center

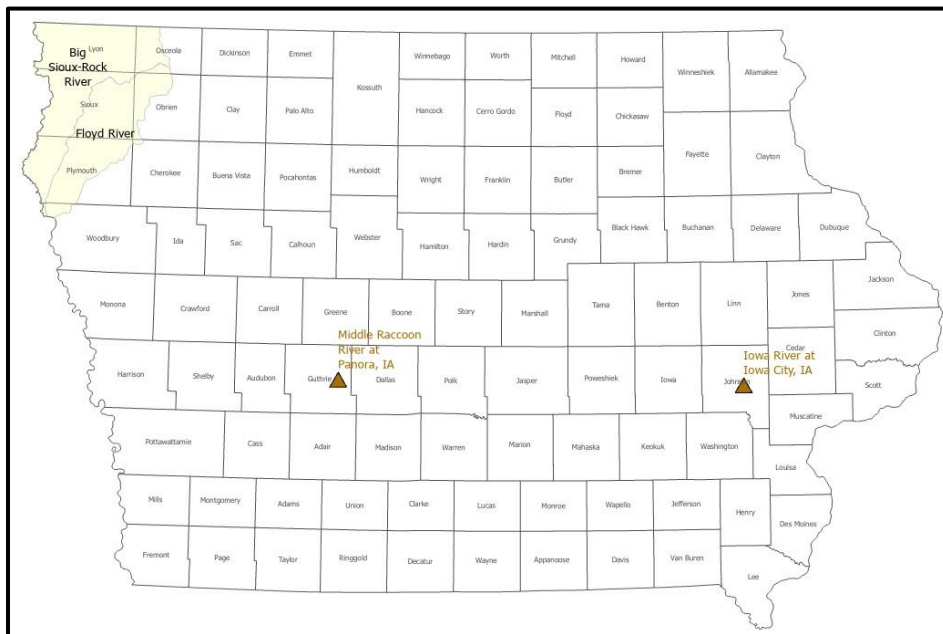


-8 -7 -6 -5 -4 -3 -2 -1 0 1 2

Stations from the following networks used: WBAN, COOP, FAA, GHCN, ThreadEx, CoCoRaHS, WMO, ICAO, NWSLI, Midwestern Regional Climate Center  
cli-MATE: MRCC Application Tools Environment  
Generated at: 3/9/2022 4:18:38 PM CST

## Shallow Groundwater - Conditions for February, 2022

Iowa DNR and Iowa Geological Survey – IIHR Hydroscience and Engineering



## RECENT DEVELOPMENTS AND CHANGES

### SUMMARY

February was a cold and very dry month. Temperatures averaged 21.3 degrees or 2.8 degrees below normal while precipitation totaled only 0.27 inches, 0.90 inches below normal. February 2022 ties 1879 as the 65th coldest and ties 1987/1996 as the 6th driest in 150 years of statewide observational records. The US Drought Monitor reflected the dry month with a significant expansion of drought conditions across the state. Streamflow has diminished across portions of southern Iowa, and shallow groundwater is causing concern in some areas of northwest Iowa.

### DROUGHT MONITOR

At the beginning of February, drought conditions were generally steady, with Abnormally Dry (D0) to Moderate Drought (D1) conditions covering 55 percent of Iowa. With a dry pattern setting up through the first half of the month, D1 conditions expanded in eastern Iowa, while precipitation deficits in western Iowa through the end of the month resulted in the expansion of D0 and D1 conditions as the month ended. As of March 1, 92 percent of Iowa has D0-D1 coverage, with D0 at 56 percent and D1 at 36 percent. Early March rain and snow helped to improve drought conditions across parts of the state. The conditions as of March 8 showed a reduction of D0 coverage to under 50 percent of the state, with D1 coverage holding steady at about 36 percent of Iowa.

### FEBRUARY PRECIPITATION AND TEMPERATURE

Most of the state's National Weather Service co-op stations reported below average precipitation in February, which is climatologically the third driest month for Iowa. Precipitation departures were generally around one inch. Monthly precipitation (melted snow and sleet plus rain) totals ranged from only 0.07 inches at Audubon Municipal Airport to 2.60 inches at Keokuk Lock and Dam. Statewide snowfall was well below normal with an average of 2.7 inches, 4.1 inches below normal ranking the month as the 17th least snowy February in 135 years of snowfall records. Keokuk Lock and Dam measured the highest accumulation of 9.6 inches for the month.

Colder than average temperatures blanketed Iowa in February with the coldest conditions found across north-central Iowa averaging three to four degrees below normal. Near average conditions were observed in western Iowa, where a lack of snowpack allowed for warmer conditions. February's statewide average maximum temperature was 33.2 degrees, 0.1 degree above normal while the average minimum temperature was 9.3 degrees, 5.8 degrees below normal. The Sioux City Airport reported the month's high temperature of 69 degrees on the 28th, 30 degrees above average. Elkader and Rockwell City reported the month's low temperature of -17 degrees on the 4th, on average 24 degrees below normal.

#### **UPDATE FROM EARLY MARCH**

Precipitation from the storms that crossed the state during the first weekend in March brought much needed moisture. The first week of March brought more than twice the amount of precipitation of the entire month of February. So far in March, Iowa has received 0.67 inches of precipitation, which is 0.14 more than normal.

#### **WINTER SUMMARY**

The climatological winter months of December, January and February (DJF) averaged 22.7 degrees or 0.2 degrees below normal while precipitation totaled 1.94 inches, 1.57 inches below normal. This winter ranks as the 16th driest, with statewide average snowfall of 12.5 inches, nearly ten inches below normal. This makes the winter the 23rd least snowy winter in 135 years of records.

#### **FEBRUARY STREAM FLOW**

During the month of February, streamflow levels remained normal for the majority of the state. Flows in the Lower Iowa and Middle Raccoon Rivers have declined into the much below normal condition and portions of the Des Moines, Skunk, East Fork 102, Thompson, Yellow, and Soldier Rivers have dropped into below normal conditions.

It should be noted that during the winter season, USGS streamflow data may be impacted by ice formation and backwater. This information should be used as preliminary information only.

#### **MISSOURI RIVER BASIN CONDITIONS**

Currently all flood storage (16.3 Million Acre Feet - MAF) is available to start the 2022 runoff season, along with an additional 8 MAF of carryover storage. The plains and mountain snowpack are generally below normal, and extreme dry conditions have carried over from 2021 and are not improving during recharge season. Long term outlooks are for an increased likelihood of above normal temperatures in the middle-lower basin and increased chances for drier than normal conditions in the central plains. The Corps of Engineers forecast for basin runoff in 2022 is 20.4 MAF, or about 79 percent of average runoff. If realized, this would be the second consecutive year of below normal runoff. The runoff in 2021 was 15.2 MAF, or just 59 percent of average.

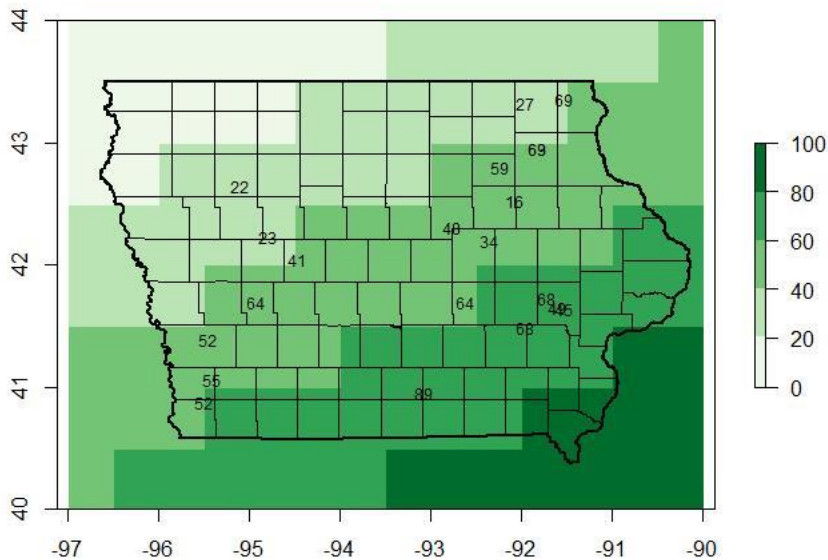
#### **FEBRUARY SHALLOW GROUNDWATER**

February conditions indicate shallow groundwater level conditions are normal across most of the state, with the exception of a few locations. In extreme northwest Iowa there have been reports of low aquifer water levels along the Rock River and Big Sioux River, though standard drought indicators don't yet reflect these issues. In addition, there are two isolated locations in the state where stream and river flows suggest that base flow from groundwater may be the majority of total river flow. Base flow is the component of stream flow that comes from the movement of groundwater from an adjacent aquifer into the river, and occurs when groundwater

levels in shallow alluvial aquifers are low, which indicates limited groundwater availability. These areas will be monitored during the upcoming normal wetter months to determine if groundwater recovery takes place.

**FEBRUARY SOIL MOISTURE**

The Iowa Flood Center map of soil moisture levels shows northwest Iowa to have the driest soils, and extreme southeast Iowa having the wettest soils. This map shows soil wetness, as a percentage, at a 20-inch depth. Parts of northwest Iowa have soil moistures below 20%, while some areas in southeast are showing fully saturated soils. After the rain and snow of the first week of March, modeled soil moisture conditions showed some improvement, but the same pattern of dry to wet conditions across the state from northwest to southeast remains.



**ADDITIONAL INFORMATION**

For additional information on the information in this Water Summary Update please contact any of the following:

- General Information, Tim Hall, Iowa DNR . . . . . [Tim.Hall@dnr.iowa.gov](mailto:Tim.Hall@dnr.iowa.gov) 515-452-6633
- Monthly Climate Information, Justin Glisan, IDALS . . . . . [Justin.Glisan@iowaagriculture.gov](mailto:Justin.Glisan@iowaagriculture.gov) 515-281-8981
- Stream Flow, Dan Christiansen, USGS . . . . . [dechrist@usgs.gov](mailto:dechrist@usgs.gov) 319-358-3639
- Stream Flow, Mike Anderson, Iowa DNR . . . . . [Michael.Anderson@dnr.iowa.gov](mailto:Michael.Anderson@dnr.iowa.gov) 515-725-0336
- Shallow Groundwater, Greg Brennan, IGS . . . . . [greg-brennan@uiowa.edu](mailto:greg-brennan@uiowa.edu) 319-335-4465
- Soil Moisture, Filipe Quintero Duque, Iowa Flood Center . . . . . [felipe-quintero@uiowa.edu](mailto:felipe-quintero@uiowa.edu) 319-384-1727